

A RISK ASSESSMENT WORKSHEET
A TOOL FOR COMMANDERS IN DETERMINING ENHANCED RESPONSES

LEADING COMMUNITY RISK REDUCTION

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ABSTRACT

This research project resulted in the development of a Consequence Rating Worksheet to be used by operational Commanders to determine whether an enhanced response should be allocated to a specific site based on the presented risk. The process will provide a systematic approach when determining whether additional resources should be dispatched to minimise the risk to members of the community, property and emergency responders.

The problem has been that senior operational staff within the Metropolitan Fire Brigade (MFB) recognised there was no systematic approach to determining levels of acceptable and unacceptable risk other than an individual's personal opinion based on previous experience. In these modern times when the community has ever increasing expectations that services will be provided professionally and cost effectively, it is evident a defined process needs to be developed. There needs to be better delivery of outcomes for the community and the staff of the Organisation.

The purpose was to develop a risk based rating worksheet for use by operational officers that will be used to determine an appropriate initial weight of response to emergencies that will provide for an enhanced health and safety environment for employees and deliver a positive outcome for the community.

The research used multiple methods of analysis; historical, descriptive, evaluative and action research to address the following research questions. What is risk and how can it be defined? What is a risk assessment and consequence rating? What state and federal legislation and standards are applicable for the identification of community risk? What is an appropriate assessment model for use by field officers in the MFB?

The procedures employed formed part of action research methodology and focused on previous organisational approaches, documents, actual experience, focus groups, interviews, evaluation of how

other emergency service organisation's determine risk and categorise their response and literature from national and international fire services.

The major outcome of this research was the production of a consequence rating worksheet; quantitatively calculating the risk of a particular site based on occupancy, building use and the preparedness of the site to identify and mitigate emergencies when they arise.

The recommendations resulting from the research included (a) the Director Operations and Executive Management Team of the MFESB adopt the guidelines and consequence rating worksheet contained in Appendices C, D, and E, (b) the Director Operations of the MFESB communicate the decision to adopt the system to all operational Commanders and Senior staff as well as other key stakeholders including the employee representative group (Union), (c) the guidelines developed in appendix C be used as the basis for implementing a training and familiarisation program for all Commanders, (d) the Director Operations, in consultation with the Commander group, Risk Manager and other key stakeholders evaluate the effectiveness of the tool by undertaking a 12-month review and (e) a copy of this study is made available as a matter of public record to allow other fire services and emergency response agencies the opportunity to consider their methodology for determining resource response based on risk.

TABLE OF CONTENTS

ABSTRACT 2

TABLE OF CONTENTS 4

LIST OF FIGURES 5

LIST OF TABLES 6

INTRODUCTION..... 7

BACKGROUND AND SIGNIFICANCE 8

LITERATURE REVIEW..... 13

PROCEDURES 20

RESULTS 26

DISCUSSION 33

RECOMMENDATIONS..... 38

REFERENCES..... 40

APPENDIX A 44

APPENDIX B 45

APPENDIX C 52

APPENDIX D 5\$

APPENDIX E 55

LIST OF FIGURES

FIGURE 1 OPERATIONAL STAFF DISPOSITION	27
FIGURE 2 YEARS OF SERVICES AT RANK / POSITION.....	28
FIGURE 3 INCREASE IN PRIMARY APPLIANCE RESPONSE.....	31
FIGURE 4 POINTS FLEXIBILITY FOR INSPECTION OFFICERS.....	32

LIST OF TABLES

TABLE 1 KEY RESPONSES FOR STRUCTURE IN PRIORITY ORDER.....	29
TABLE 2 KEY RESPONSES FOR OCCUPANCY IN PRIORITY ORDER.....	30
TABLE 3 CRITERIA / RATING ATTRACTING AN INCREASED RISK.....	31

INTRODUCTION

The Metropolitan Fire Brigade (MFB) operates under the auspice of the Metropolitan Fire and Emergency Service Board (MFESB) within a large urban environment in Melbourne, the capital city of Victoria, Australia. The Metropolitan Fire District (MFD) is geographically large, having a service delivery area that spans nearly 1200 square kilometres, serving a population of approximately 3.6 million people. Within the jurisdiction, there are a diverse range of hazards, including a major port facility, international and regional airports, underground motorway and train tunnels, major petrochemical, chemical manufacturing and storage facilities, as well as many high rise office and accommodation complexes. This requires the MFB to be well trained and responsive to the ever-changing community demands placed upon it.

In these modern times, the community expects all government agencies and authorities, including emergency service providers, to perform effectively and efficiently in combating all types of emergencies. To ensure the Brigade can deliver in accord with community expectations, there must be a systematic approach to responding the appropriate number and type of resources to ensure safety of staff and ensure an appropriate performance and effective mitigation of any emergency.

Historically, the Chief Fire Officer has determined a level of response to premises based on type and location; generally a two-appliance response to calls other than in the central business district of Melbourne where, given the greater perceived risk, a six-appliance response has been determined as appropriate. In the wake of the tragic events of September 11, 2001, the Victorian Government placed an expectation on primary emergency response agencies to step up emergency preparedness requirements. This means ensuring that an appropriate response, using a risk based model that will ensure the dispatch of appropriate resources to properly mitigate emergencies when they threaten the community. Consistent with stakeholder expectations and as a result of recent spates of 'white powder' type incidents the Chief

Fire Officer has directed a process be developed to ensure an appropriate weight of response to emergencies.

The problem that has given rise to this research paper is that the MFB lacks a process and instrument to identify and rate risks within the geographic boundaries of the MFD. The purpose of this paper is to develop a consequence rating worksheet for use by inspecting officers, primarily field Commanders, when determining an enhanced response to high risk premises or situations.

To investigate the issues relating to the problem, and achieve the goals specified in the purpose, the researcher has employed action research methodologies. In determining a solution answers have been sought to the following questions:

What is risk and how can it be defined?

What is a risk assessment and consequence rating?

What benefits would be derived from using a risk based approach when determining enhanced responses?

What is an appropriate assessment model for use by field officers in the MFB?

BACKGROUND AND SIGNIFICANCE

In 1890, the Victorian Government established the Metropolitan Fire Brigades Board (MFBB). This saw the establishment of a full time firefighting service to protect the Victorian capital, Melbourne, and the surrounding suburbs. Prior to this, volunteer brigades operated in the suburbs, whilst insurance company financed brigades operated in the city. Country Victoria was protected by a multitude of independent local volunteer brigades.

Following serious fires across Victoria in 1939 and again in 1944, the Government consolidated fire service operations for Victoria, establishing the Country Fire Authority (CFA) in 1945. Due to urban growth, and the need to provide appropriate and equitable emergency response coverage to the

community of Victoria, the Government proclaimed new legislation defining specific powers for each organisation. The Metropolitan Fire Brigades Act 1958 and the Country Fire Authorities Act 1958 were proclaimed. The MFB Act defines a jurisdictional boundary referred to as the Metropolitan Fire District (MFD) and is funded and resourced primarily as an urban brigade. The legislation specifies how the Brigade will operate within its area of jurisdiction.

Today, the MFESB, being superintended by a Board, is responsible for the direction and governance of the organisation. A Chief Executive Officer (CEO) is responsible for the implementation of Board policy. The CEO is supported by seven Directors each leading the functional areas of Operations, Policy and Strategy, Corporate Relations, Community Safety, Human Resource Management, Finance and Administration and Technical Services.

Service delivery is achieved through 47 strategically located fire stations, geographically divided into four zones across the MFD. These are staffed by approximately 1500 professional firefighters and supported by 300 non-uniformed staff. Operational staff operate on a 10-14 shift system and each station is managed by a Station Officer or Senior Station Officer depending on crewing levels and risk profile. The Department responds to approximately 33,000 emergencies annually and has an annual operating budget of approximately \$AUD197 million (Metropolitan Fire and Emergency Services Board, 2004).

Since the promulgation of the Act in 1958 the MFB response to emergencies has been traditional in nature; the Chief Officer has determined an initial response to calls for emergency based on emergency type; two appliances to structure and non structure fires, one appliance and a rescue to motor vehicle and industrial accidents, six appliances to calls in the central business district of Melbourne and one appliance to petrol washaways, as examples. This power is contained within the legislation that empowers the Chief Officer to determine the response to calls for emergency. In section 32B of the

Metropolitan Fire Brigades Act (1958) it states “On an alarm of fire being received by a unit, those members of the unit specified by the Chief Officer must, with the appliances and equipment specified by the Chief Officer, proceed with all practical speed to the scene of the alarm of fire.” (Victorian Government, 1997).

On arrival at the scene the initially responded officer transmits, via radio, an appropriate wordback detailing a required alarm level which determines whether additional resources are required to deal with the situation.

This standardised, and some might say, simplistic approach was further confirmed in a conversation with Sid Inglis, retired Communications Centre Supervisor; he stated

“...generally the Chief’s standard rules worked well however there were many occasions when judgements were made in the control centre to enhance the response. Often the number of vehicles responded to the call was based on the number of calls received from members of the public and the information provided by those callers; more or less a ‘gut feel’ for what was happening” (personnel communication, February 9, 2004).

In 1996 a fire occurred at a supported residential care facility for the intellectually impaired. Nine men lost their lives in the resultant conflagration. The subsequent inquest found there were significant deficiencies in the premises construction and installed fire protection causing an increased risk for the occupants. No criticism was levelled at the Brigade for its response or mitigating actions however, within the Brigade, the question has often been raised as to whether more could have been done had an enhanced response to the fire call been initiated. Valuable time can be lost in responding additional resources to emergencies, particularly when there is a high life risk.

Given the heightened community expectation and the expanded Organisational role such as managing hazardous material emergencies and the like, it is important to ensure an appropriate weight of

response, particularly to those premises presenting a significant community risk. This has to be balanced with the risk of having unnecessary resources responding thus increasing the risk to users of the road network across the Metropolitan Fire District.

In a recent conversation with the Chief Fire Officer, Tony Murphy, the subject of response was discussed. He highlighted the fact that “Responding to emergencies had to be carefully balanced between providing an appropriate initial response to an emergency against an excessive response that may place the general public at risk.” (personnel communication, March 19, 2004)

In recent years there has been a significant state and federal government focus on workplace health and safety. Too many people have been injured or killed at work. At a recent seminar the Chairperson of the Victorian Health & Safety Commission commented that during the 1980s and 1990s one of the most notable legislative trends in Australia was the enactment of new occupational health and safety legislation within each State. This placed a significant onus of responsibility on employers to provide a safe work environment for employees (Durham, 2002). In more recent times the Victorian Workcover Authority (VWA) has determined there needs to be greater accountability in agencies involved in emergency response activities and has taken on a renewed focus resulting in significantly increased employer responsibility. The MFB has been identified as one of VWA’s top “100 Group” for injury claims in the workplace over the past two years. They are committed to assisting the Organisation in reducing the number of accident claims.

Given the Organisation has recently enhanced its computer aided dispatch (CAD) system and that it can now be tailored to provide additional information on specific premises, there exists an opportunity to detail specific initial responses to premises identified as ‘high risk’. Of course this begs the question; what is ‘high risk’ and what constitutes this risk?

Any emergency can present a risk to life and property; equally it can pose a risk to the attending crews. In modern times there are many more pressures and expectations on emergency service organisations to react appropriately to calls for assistance.

Risks may be of a temporary nature due to building reconstruction and installed fire protection systems being isolated. Currently there is a strong emphasis on hazards such as asbestos. These substances create a risk for responders who may be unaware of such hazards being present. Premises themselves, due to their age and poor maintenance, may constitute an additional risk to responders if they are old or have inadequate installed fire protection.

There are numerous permanent risks within the community that, based on appropriate risk evaluation, may require an enhanced response as standard protocol. These include petrochemical and other major hazard facilities, underground transport tunnels or premises containing specific hazards. Also, recent government initiatives have seen a greater emphasis on assimilating disadvantaged groups back into the community. Physically and intellectually challenged people are now living in integrated community housing. In an emergency they may not have the capacity to ensure their own safety in an emergency. Finally, a group often forgotten are those of different ethnic backgrounds; often not speaking english and having an aversion to government authorities in uniform. They may constitute an additional risk.

The Organisation expects station crews to regularly undertake inspections of premises within their response area to ensure familiarity with the property and to ensure installed systems and equipment provided, for the detection and control of fire, are maintained and in proper operational condition. When anomalies are identified an immediate report is forwarded to the Commander for follow up. Whilst the inspecting officer is well trained in determining compliance with relevant legislation, there is no standardised risk based methodology for determining when an enhanced response should be initiated for

a specific site or occupancy. It is basically left to the Commander's, as the inspecting officer, professional judgement and 'gut feel'. There needs to be a better approach; one that is standardised provides some level of flexibility but most importantly is based on a simple risk rating model.

Given these parameters, it is important to provide an appropriate initial response to calls for assistance to premises constituting 'high risk'. The initial response needs to allow for effective size up and initiation of mitigation strategies whilst ensuring a reasonable level of safety to firefighters and the broader community. Due to societal changes and the focus on effective emergency management and improved safety, for both employees and members of the community, a considered response must be determined for all situations. There needs to be a systematic tool available to inspecting officers to ensure appropriate decisions can be determined relative to enhanced response.

This research paper specifically recognises the need to transform fire and emergency service organisations from being reactive to proactive; with an emphasis on leadership development, prevention and risk reduction (National Fire Academy, [NFA], 2004). It relates to the fire prevention component of the National Fire Academy's Leading Community Risk Reduction required by the Executive Fire Officer Program. This Applied Research Project (ARP) relates to the United States Fire Administration operational objective "reduce the loss of life from fire in at risk groups" (NFA, 2003, p. II-2) by implementing a risk based approach to initial response to emergency calls.

LITERATURE REVIEW

The literature examines various aspects of an enhanced initial response criteria, using a risk based approach; each research question being considered independently whilst recognising there is some overlap in the subject areas. Literature was sourced and reviewed from the National Fire Academy (NFA), the MFESB and CFA Libraries, and the internet where appropriate.

Four questions need to be addressed. First, what is the definition of risk? Second, what is a risk assessment and consequence rating? Thirdly, what benefits would be derived when using a risk based approach for determining enhanced responses? and finally, what is an appropriate assessment model for use by Commanders in the MFB?

The Australian Oxford Dictionary defines risk as, “A chance or possibility of danger, loss, injury, or other adverse consequences (a health risk; a risk of fire)” (Moore, 2004 p.1221). Blanchi, Leicester, Leonard, representing the Commonwealth Bushfire Research Centre at a recent conference in Western Australia, asserted in their presentation Bushfire Impact on Isolated Communities that risk was “The chance of something happening that will impact on objectives” (2004). This is a condensed definition to that found in the Australian and New Zealand Standard for Risk Management which states risk is “...the possibility of something happening that impacts on your objectives. It is the chance to either make a gain or a loss. It is measured in terms of likelihood and consequence.” (AS/NZS: 4360, 2004, p. 2). “Risk is the chance of events and/or the circumstances occurring that could have an impact in service objectives and/or outcomes. Risk arises out of ‘uncertainty’ and is assessed in terms of (a) likelihood and (b) consequences” is how risk is presented by the Commonwealth’s overseas aid organisation, AusAID in their paper Circular on Risk Management.(AusAID, n.d.). The Australian Geological Survey Organisation Cities Project’s Granger, Jones, Leiba, & Scott (1999) contend risk is “the outcome of the interaction between a hazard phenomenon and the vulnerable elements at risk (the people, buildings and infrastructure) within the community (p. 25), while Hertz and Thomas (1994) define it to mean “...uncertainty and the results of uncertainty...risk refers to a lack of predictability about problem structure, outcomes or consequences in a decision or planning situation (p. 14).

Looking at the concept from a different perspective, many groups and organisations perceive risk is best described as a mathematical expression. The NFPA, a proponent of a mathematical concept,

states, “Risk is a characteristic of an entire probability distribution, with a separate probability for each outcome” (NFPA, 2000, p. 15). A simpler view is shared by Chicken and Prosner (1998) where they contend a simple equation defines risk. Their solution is “Risk is equal to the product of hazard and exposure” (p. 7). Other risk focused organisations, such as the Risk Management Institute of Australia (RMIA) and the New Zealand Society of Risk Management (NZSRM), also ascribe to a mathematical model; however they proffer a formula whereby risk is equal to the product of probability and consequence (2001). Placing these models into perspective, all distil the probability and consequence discussion into the following. How is an event to happen, and, should it occur, how severe are the outcomes or consequences?

A review of risk assessment and consequence rating needs to be considered. Simply put, “risk assessment asks, ‘How risky is this situation?’” (Iolster & Flanagan, 1997, p.7) Iolster and Flanagan observed that some individuals perceive risk assessment to lay in the scientific domain, whereas others consider it a policy and community involvement issue. “In any case, all of these issues are integral parts of the risk assessment process” (Iolster & Flanagan, 1997, p. 4). Two critical components of a risk assessment are the consequence rating and the likelihood of the event occurring. The Australian Defence Force use a risk assessment matrix in the major contracts portfolio. The matrix consists of a consequence ranging from insignificant through five steps to severe and likelihood ranges from rare through to almost certain (ADF, 2004, p. 4). A Western Australian Government publication uses a similar process for determining risk within key infrastructure. “...A consequence rating is determined followed by a likelihood of occurrence; each determination has an equivalent numerical value.” (Western Australian Government, 2005, p.7). Choosing to move beyond these traditional definitions, Oyo RMS, a risk analysis partnership formed with the OYO Corporation of Japan and Risk Management Solutions, Inc. of the United States, prefers to express risk assessment as the catalyst that promotes the development of

informed organisational strategies, consequently, resulting in the effective management of risk (Oyo RMS, 2002). This philosophy is further refined by the Federal Emergency Management Agency (FEMA) describing risk as “a process or application of a methodology for evaluating risk as defined by probability and frequency of occurrence of a hazard event, exposure of people and property to the hazard, and consequences of that exposure” (FEMA, 1997, p. 295).

It is important to review the risk assessment and consequence rating in terms of fire service operations. In 2000 the New Zealand Fire Service (NZFS) completed a study on resource allocation and deployment. Although not specifically referring to their system as a consequence rating process or system, the study did espouse a model “...whereby resources across the country may be deployed cost effectively in relation to the fire risk, to achieve agreed targets for time and weight or response. Resources include personnel and equipment” (Beever, Cuthbert, 2000). The model has created a standardised process of response, dependent on risk, for communities across New Zealand.

Enhanced responses based on consequence rating are not confined to departments whose principle focus is urban firefighting. San Mateo County Fire Service (SMCFS) in California has adopted a Wildland Response Plan. The purpose of the plan is to “adopt a formal procedure for determining the extent of initial response for San Mateo County fire agencies responding to a wildland fire based on available weather data” (San Mateo County Fire Service, [SMCFS], 2000, p. 1). The system is based on prevailing weather conditions that will determine the daily fire danger index. Dependent on the index, an enhanced automatic alarm level will be initiated. Dependent on weather conditions and the complexity of the emergency an automatic initial response may be doubled to ensure the appropriate dispatch of resources to commence firefighting operations (SMCFS, 2000).

In the United Kingdom (UK) the Fire Services Inspectorate has determined that minimum standards of fire cover and response will apply. In the London Fire Brigade, response has been

determined based on four classes of risk. A standard response has been assessed for each risk category. “For premises identified as “special risks” the government recognise that authorities should send a greater weight of attack, or mobilise resources such as aerial appliances. Each Brigade will detail the deployment of specialist resources based on risk or incident type” (London Fire Brigade, 2003, p. 2).

A similar explanation is given in the National Fire Protection Association (NFPA) 1710-2001 standard for the organisation and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments. The standard defines a sustained attack as the, “activities of fire confinement, control and extinguishment that are beyond those assigned to the initial responding companies” (NFPA, 2001, section 3.3.7.2). NFPA 1710 is quite specific regarding the number of personnel and types of apparatus needed on the initial alarm; it is less specific about supplementary resources needed for sustained or complex operations. It does however stress that fire departments must have the capability for greater alarms for situations that develop beyond the capabilities of the companies responding to the initial alarm (NFPA, 2001, section 5.2.3.3.1).

Finally, to consolidate this question the South Australian Metropolitan Fire Service (SAMFS) have a Standard Operational Procedure (SOP) No. 4 that details a Predetermined Risk Response and Greater Alarm System. “Predetermined Risk Response System comprises a methodology of categorizing risks and an attendance schedule for predefined risk categories. The system defines a predetermined type and number of appliances required to respond to an emergency dependent upon location, risk involved and alarm level” (South Australian Metropolitan Fire Service, [SAMFS], 2003, p. 1). The SOP also details that “where the initial response is insufficient the Incident Controller has the discretion to upgrade the alarm level giving a predetermined increase in resources dependent on incident type” (SAMFS, 2003 p. 3). This SOP also details prescribed responses to specialist incidents such as collapsed structures, high angle rescue, flooding and mutual aid response with their rural counterparts in the Country Fire Service.

It is important to determine the benefits that would be derived from using a risk based approach when determining enhanced responses. In Western Australia the Fire and Emergency Services Authority (FESA) use a consequence management approach when determining sites that constitute a high community risk. Their procedural document states benefits include “working with government, community and industry to ensure effective response to protect critical infrastructure.” (Fire and Emergency Services Authority WA, 2004, p.2). Literature from SAMFS states that the benefits of a predetermined risk response include “The immediate mobilisation of the nearest appliance resources in sufficient numbers to provide reasonable fire strike force and supplementary support in consideration of the risk and circumstances encountered at the emergency” (SAMFS, 2003, p. 1).

This is supported in literature from the NZFS that determines there are significant community benefits derived from the effective deployment of resources. One of the principle drivers include providing “a value for money response by deploying appropriate resources to safely and effectively manage emergencies for the betterment of the community” (Beever, Cuthbert, 2000, p. 16). Also, within the same study, the authors believe that an effective risk based approach to emergency response will provide a general mobilisation plan that provides central control an effective management tool for monitoring the deployment and movement of response resources. This is confirmed in documentation from the San Mateo Area Fire-Rescue Services. They implemented a risk based response plan to ensure the provision of additional units, in a timely manner, to incidents that constituted a significant risk to the community. (San Mateo Operational Area Fire-Rescue Services, 2003, p.1).

Finally, a review of literature was undertaken to determine what factors need consideration when developing an appropriate consequence rating tool for the MFB. In the publication *Monograph on Risk Assessment for the Emergency Services*, Klein suggests that when conducting an assessment “...the assessor needs to consider a broad range of aspects, both directly as well as indirectly, that are likely to

increase the risk of a premises.” (Klein, 1997 p. 12). The specific items and circumstances considered can be considered for both complex and non-complex premises. They include major hazard sites, complexes with large undivided floor areas, use, storage or manufacture of hazardous substances, large populous, public buildings, premises containing infirmed people, high rise buildings, premises difficult to access and special infrastructure. (Klein 1997 p.13). In the United States a collaborative partnership between the United States Fire Administration (USFA) and International City/County Management Association (ICMA) developed an electronic database, RHAVE, which captures and analyses data based on risk, hazards and values. (Accreditation, NFPA 1710, 2002). The structure fire model details seven key areas, with sub-clauses, when calculating risk. These include Premises, Building, Life Safety, Risk, Consequence, Water Demand and Value.

The risk assessment model suggested by Davis (1997), which has been designed specifically for use across the UK fire services, is based on points score dependent on probability and severity. He does state that probability is difficult to predict accurately, nevertheless quantitative risk analysis is successfully used by many organisations. Davis also discusses a simplified methodology designed by Klein (1997) that simply categorises risk as A, B or C. The point’s criteria for determining the risk category covers areas including population density, separation, construction, number of storeys and occupancy rating. The response is determined, after calculation, based on risk category outcome.

Discussions with Director of Operations Chief Fire Officer Murphy, clearly determined a risk based approach needed to be developed and implemented across the Organisation. He stated,

We can no longer base first response merely on professionalism, experience or ‘gut feel’. There must be a documented approach, based on a calculated determination of heightened risk that can be used by field officers when inspecting premises. We must ensure the Brigade meets

government and community expectations at the same time ensuring we meet our health and safety obligations. (personal communication, April 10, 2004).

In summary, “Simply, a risk assessment asks, ‘How risky is a situation? While risk management asks, ‘What can be done about it?’” (Iolster & Flanagan, 1997, p.7). Risk is a process of determining probability, frequency of occurrence, exposure and the consequence of the exposure. A consequence rating tool should include a broad range of criteria about the occupancy, use and structure of the premises. A common approach to determining risk is with the use of a matrix determining probability and consequence. Any matrix must consider a broad range of hazards to ensure a comprehensive calculation of risk can be undertaken.

There is a government and community expectation that service organisations, and in particular emergency service providers, will provide an effective service to the people that are served. There is clearly a net community benefit in providing an appropriate risk based tool for field Commanders to use when evaluating the level of risk at particular premises. A quantitative model is necessary in order to differentiate between minimal and significant risks. It is in the best interest of the MFB to develop and introduce a risk based approach when determining enhanced responses to premises.

PROCEDURES

Research Methodology

The purpose is to develop a risk assessment worksheet for Commanders to use when determining enhanced responses that will provide an effective tool when inspecting premises that may, in themselves be, or contain ‘high risks’. The tool will ensure an appropriate weight of response to calls for assistance minimising the risk to firefighters and the community.

The research employed a combination of action, historical, descriptive and evaluative research. Several processes were undertaken; firstly, numerous Australian and overseas publications were

reviewed to determine whether a similar risk tool was used by other fire service organisations; the context in which they used their tool and what approach, if any, was used to develop their process. Publications included Australian fire service publications and several Australian and overseas standards. Numerous articles were sourced from texts and periodicals. The internet was also used extensively to access various national and international fire and other emergency service organisations to obtain information. The research was conducted using the MFB and CFA libraries, NFA Resource Centre and the internet. The literature review was used to seek views on the benefits of a consequence rating system and determining what benefits it delivers for emergency response organisations. This research assisted in providing information for questions one, two and three of this ARP. The research was completed between September 2004 and June 2005.

In addition to the literature review a number of focus groups, by request, were conducted with MFB Commanders and other key personnel (Appendix A). Also, interviews were conducted with other key senior operational personnel during the progression of this research project. To ensure a level of consistency a questionnaire (Appendix B) was developed that formed part of the focus groups to poll the participants eliciting their views regarding the best options for the development of a risk rating tool.

Participants were requested to complete the questionnaire prior to attending the workshops. This information was used, in conjunction with the focus group discussion, to determine options for a consequence rating matrix. The focus groups involved a convenience sample of Commanders and other personnel functioning in various portfolios across the Organisation.

The questionnaire consisted of seven questions; one question having two parts. Question one related to the individual's rank and number of years at the rank. Question two, requested the participant to provide some examples of permanent versus temporary risks. Question three requested the participant to determine "key triggers" relative to a structure that would constitute an enhanced risk; rating them in

priority order. Question four elicited similar information relative to the occupancy of a premises; again rating them in priority order. It was expected that personnel would draw on past experiences to provide information for these questions. Question five, requested the participant to determine when an enhanced response should occur dependent upon consequence rating. Question six sought information as to whether there should be a discretion rating for the inspecting officer and what level of flexibility should be provided when determining the risk rating of a premises. Finally, question seven asked for any other considerations should be considered in the development of the consequence rating matrix; either included in the matrix or considered as part of the ongoing review..

It was important the questionnaire was completed prior to attendance at the allotted focus group as the questions formed the basis for expanded discussion. Participants were encouraged to offer their views and validate their given answers. Each focus group formulated a preferred model. This consisted of a whiteboard exercise where each participant had the opportunity to have input into the design of the consequence rating sheet.

From the focus groups, the questionnaires and general discussion an appropriate model was refined and over a series of consultations, including interviews with key stakeholders, an agreed risk/consequence rating proforma was developed.

In developing the rating sheet (Appendix D), a supporting document has been developed that forms an explanatory/information sheet for use by officers. This document will form the basis to communicate the change at familiarisation sessions for Commanders (Appendix C).

The 5th Edition of the Publication Manual of the American Psychological Association was extensively referenced in the preparation of this ARP.

Limitations and Assumptions

In the first instance there needs to be clarification of risk and hazard. For the purposes of this paper, it has been determined these terms are interchangeable but may have specific application from a jurisdictional perspective only.

The research has a range of limitations. Firstly the research is focused on producing a tool that will assist in determining the appropriate weight of response to a particular risk. It does not take into consideration the Organisation's Greater Alarm response System for specialist events such as Urban Search and Rescue or High Angle Rescue. Also, it does not predict the number of management staff required to respond to provide effective scene management. This will be the subject of subsequent research at a later time.

Although the research includes information on system types employed nationally and internationally, the outcomes are limited to the operational response criteria used by MFESB and any decision to enhance a response to a particular premise has to compliment the incident management system and emergency management arrangements currently legislated in Victoria.

Also, there is only a limited amount of literature available on this specific topic. Many departments discuss risk mitigation strategies utilising mutual aid agreements with neighbouring organisations to provide effective response, however there is limited literature on how large departments determine resource response to specific risks.

Of significance to the development of the consequence rating sheet was that 'likelihood' was not included in determining the risk rating. It was determined there was an equal likelihood of an emergency occurring anywhere in the MFD; what needed consideration was what consequence would result when an emergency happened.

A further limitation relates to the role of the researcher. As an active participant in the decision making process and in the development of a consequence rating sheet, the potential for bias is evident.

The researcher recognises this as a factor consistent with the methodology of action research. Crowther and Gibson (1990) warn that the nature of qualitative analysis leaves it open to subjective bias.

Qualitative inquiry can be an intensely personal process, and, “the unknown researcher can colour, taint or distort both the process itself and eventual research outcomes through intrusion of personal values, attitudes and biases,” (p. 41).

The number of personnel completing the questionnaires and attending the focus groups was limited to operational staff available at the time and does not necessarily represent the views of all personnel. The focus groups were limited to Assistant Chief Fire Officers, Commanders, Risk Manager, and several fire safety and communications managers.

The researcher has made a number of assumptions. The first is that not all assessments may require an enhanced response. Printed notification to responding crews of an “aggressive occupant – Police to attend” may be all that is required. There needs to be facility within the CAD system to allow for such notes. Also, there will be a need to field test the resultant rating sheet as not all contingencies will be thought of when conducting the focus group sessions.

It is assumed that the response roles currently undertaken by the Brigade will remain consistent.

In compiling the questionnaires, it is assumed that all respondents answered honestly.

It is assumed that the developed rating sheet, when implemented, will be supported by all key stakeholders.

It is assumed the Organisation will support this review by implementing an appropriate familiarisation program to ensure all staff understand, and will be able to make effective decisions using the new tool.

The final assumption is that the organisation will support the recommendations for adopting the developed consequence rating sheet and resultant enhanced responses as, it has been determined, the ultimate beneficiaries will be the employees and the community.

Definitions of terms

In order to clarify the intent of the paper, a number of key terms emerge from the literature and are defined as follows:

Alarm of Fire: Any call for assistance at a fire, accident, explosion or other emergency

AUD: Australian Dollars.

CAD: Computer Aided Emergency Response Dispatch System

CFA: Country Fire Authority.

Consequence: The outcome of an event expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain.

Emergency Management: The generic philosophy of bringing together, in an integrated way, the resources of appropriate agencies to mitigate an emergency.

Fire Ground: The location of any emergency (Refer to Incident).

Hazard: A danger or risk (Refer Risk).

Hazmat: Attendance to an emergency involving hazardous or noxious materials.

Incident: An occurrence either human caused or by natural phenomena, that requires action by emergency service personnel to prevent or minimise loss of life or damage to property and/or natural resources.

Likelihood: The probability of a specified outcome.

MFBB: Metropolitan Fire Brigades Board.

MFD: Metropolitan Fire District.

MFESB: Metropolitan Fire and Emergency Services Board.

Mitigation: Effectively lessening the effects of an emergency.

Non-Structure Fire: A fire not involving a building or structure.

Probability: A measure of how likely it is that some event may occur.

Risk: A chance or possibility of danger, loss, injury, or other adverse consequences.

Structure Fire: A fire involving a building or structure.

Victorian WorkCover Authority: Manager of the state's workplace safety system.

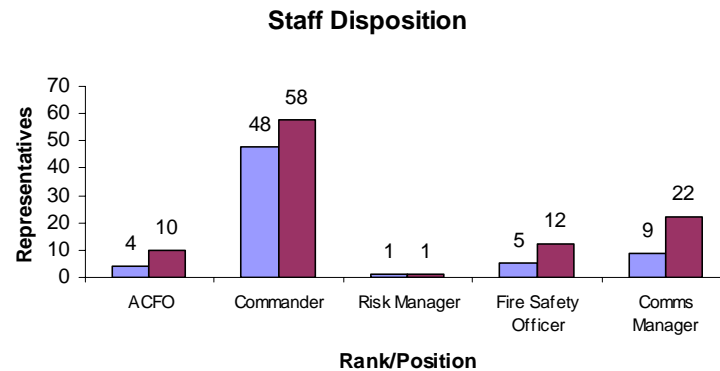
Zones: The Metropolitan Fire District is divided into four geographic areas referred to as zones.

RESULTS

After review of a broad range of literature it was determined that, due to the increasing community expectation, it was important for inspecting officers, primarily Commanders, to have a risk based tool for determining enhanced responses. No longer can officers simply use 'gut feel' when determining the level of risk. They must use a systematic approach considering the occupancy, structure, contents, firefighter safety and surrounding environment when deciding whether an enhanced response is appropriate to adequately initiate firefighting operations when an emergency occurs. There is an expectation that emergency response agencies will manage emergencies, minimising risk to personnel whilst effectively mitigating the circumstances of incidents for the community benefit.

There was a total of 62 (100% response rate) of staff completing the questionnaire (Refer data sheet, Appendix B). Staff nominated to complete the questionnaire and attend the focus groups were selected from those available. The disposition of staff attending the focus group meetings is detailed in the accompanying figure 1.

Figure 1 – Operational Staff Disposition

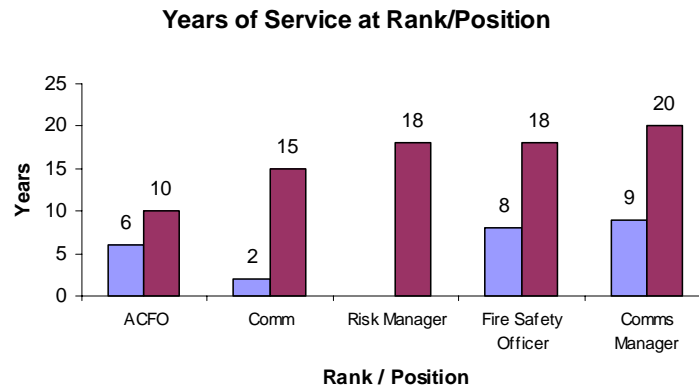


An appropriate cross-section of personnel attended the focus group workshops. There were 4 (40% of Brigade appointments) of Assistant Chief Fire Officers, 48 (83%) of Commanders, 1 (100%) the Brigade's Risk Manager, 5 (42%) of the Fire Safety Officers and 9 (41%) of Communications Centre Operators attended in mixed groups. As previously stated, it was determined that primarily Commanders and Fire Safety Officers would participate as they are the operational group trained to conduct assessments of premises however it was determined prudent to involve personnel from other areas that have input into the organisations risk process or would be managing the input of risk information and enhanced responses into the computer aided dispatch databases.

There was a broad range of experience across all groups ranging from two years to 18 years at their respective rank. All personnel have either a direct or indirect responsibility for determining the level of risk at a particular site. It was important to ensure the broadest range of input from staff and an opportunity of having differing views depending on their functional role.

Participants experience is displayed as follows; the first column displaying the minimum service in the current position / rank and the second the maximum number of years. The results are displayed in figure 2.

Figure 2 – Years of Service at Rank / Position



Participants provided a broad range, as they perceived them, of permanent and temporary risks located across the Metropolitan Fire District. In many instances respondents provided specific names of facilities, for example, Orica, Chemplex, Olifins and the like. These were consolidated into general hazards or risks such as Major Hazard Facility or Chemical Complex. The examples presented in the respondent results are a compilation of the series of convened workshops. Participants were provided with the consolidated results for final comment. There was agreement that all of the listed sites would fall into the permanent or temporary category.

There was a strong response from participants when prioritising the key triggers relative to the structure of a premise that should be considered in the development of a consequence rating matrix. There was strong support that increased risk would be directly related to a structure lacking fire alarm systems or installed firefighting equipment. The highest priority was overcrowding of a premise, particularly in occupancies involving people that may be impaired due to alcohol. It was interesting to note that many of the respondents considered that buildings of significance, such as heritage or historical listed buildings were important to consider. This was based on the possibility of the premise not having modern or up-to-date fire protection equipment installed or that the site may be hazardous for responding firefighters. Table 1 displays the key responses for structure in priority order.

Table 1 – Key Responses for Structure in Priority Order

Key Trigger for Structure	Priority Rating
Building Overcrowding	43
Lack of Installed firefighting equipment (Hose Reels etc.	42
Building of significance – (Historical, Unique, Heritage Classification, etc.)	40
Lack of compliance with egress provisions	39
Lack of evacuation equipment or procedures	39
High Rise Building	36
Inappropriate use of premises	35
Lack of Installed or properly maintained Fire Alarm Systems	31
Unique Properties – (High Bay Storage Warehouse, etc.)	29
Physical Size of Premises / Complex	23
Number of occupants – (Casino, Chadstone, etc.)	21
Building Complexity	19
Underground Tunnels – Road and Rail	19
Significant Building under construction	18
Airport facilities	16

Participants were requested to undertake a similar rating for the key triggers relative to occupancy. There was a very strong emphasis on people who may be impaired or using a facility for accommodation. It was no surprise that premises involving infirmed people were high on the priority rating list; particularly hospitals and backpacker accommodation. It was noted this needed to be balanced against the construction of the premises in question. The results are displayed in Table 2.

Table 2 – Key Responses for Occupancy in Priority Order.

Key Trigger for Occupancy	Priority Rating
Elderly People in residence	62
Large numbers in sleeping accommodation	60
Intellectually Challenged people in Residence	60
Inappropriate use of facilities, particularly relative to accommodation	59
Infirm patients – (Hospitals, Supported Residential Care, Hospice, etc.)	58
Backpacker Accommodation – (Overcrowding)	58
Inappropriate storage of dangerous substances	55
Alcohol impaired people	51
Overcrowding – (Nightclubs, Discos etc.)	49
Chemical Storage / Manufacture	44
Prisons, Detention Centre Inmates	43
Intellectually Challenged people in Day Care	43
Low socio-economic occupancy – (Half Way houses, Drop in Centres, etc.)	41
Fire Load within Premises	32
High Bay Storage Facilities	19

Participants provided a variable response to several key criteria they determined should be incorporated into a consequence rating worksheet. A one point score was rated for three of the criteria. A two point rating was attributed to criteria related to evacuation plan and premises serving alcohol; particularly night clubs. There were no top priority criteria that attracted a three point score. Premises that contained non-ambulant persons or where significant numbers would be using the facility for sleeping purposes rated the highest score of four points. Participants determined that a rating of five points was too high for any single criteria although, as will be detailed in a later section of the

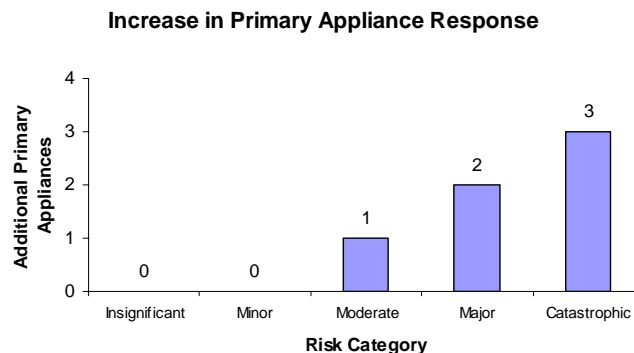
questionnaire, it was determined the inspecting officer should have a significant allowance for professional judgement. The results of the criteria rating are detailed in table 3.

Table 3 – Criteria / Rating attracting an increased risk.

Criteria / Rating	1	2	3	4	5
Maintained Fire Alarm	45	13	4	0	0
Installed Hydrants/Hose Reels	52	8	2	0	0
Evacuation System	53	9	0	0	0
Evacuation Plan	9	36	15	2	0
Building Height (4 Storeys)	41	12	6	3	0
Infirm Patients	0	3	14	45	0
Sleeping Accommodation	0	9	11	42	0
Night Club/Alcohol	17	33	12	0	0
Chemicals	0	8	15	39	0
Heritage Listed	23	32	7	0	0

Participants determined there was no need for an enhanced response if the consequence rating was insignificant or minor which, when calculated, equates to six or less. If the rating scored moderate there should be an increase in response of one additional primary appliance. If the score reached major or catastrophic then an increase of two or even three primary appliances as well as additional specialist equipment may be required. It was also determined that should a site reach a rating equating to catastrophic then immediate action should be taken by the inspecting officer to involve the appropriate authorities to mitigate the potential risk. The results of the number of additional appliances that should be dispatched is displayed in figure 3.

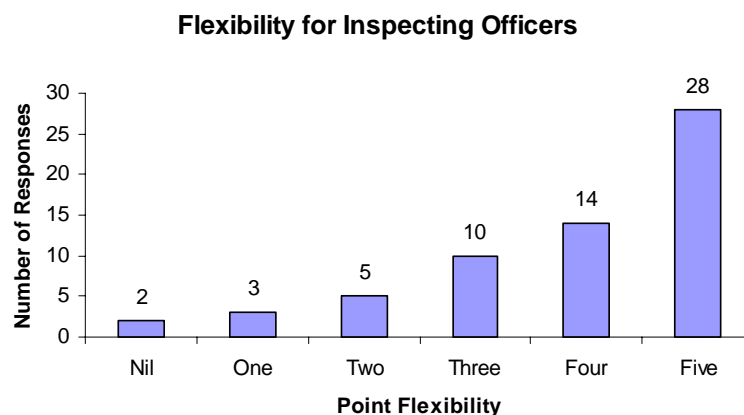
Figure 3 – Increase in Primary Appliance Response



The majority of participants, 60 (97%), were satisfied that the inspecting officer should be given discretion when determining whether an enhanced response is required or desirable. There were several reasons to provide discretion, that may not directly involve the structure or occupancy, including poor water supply, road congestion or road works, poor access or higher than normal levels of risk to firefighters.

Participants were requested to select their preferred level of discretion that should be given to inspecting officers. Two respondents (3%) considered there should be no discretion allowed. The strongest support was for there to be a maximum level of discretion; five points. This was supported by 28 (45%) or respondents. If this is added to those selecting a four point criteria, the percentage increases to 42 respondents (68%). These results are presented in figure 4.

Figure 4 – Points Flexibility for Inspection Officers



The final question requested respondents provide additional comment that may clarify or qualify previous answers in the questionnaire. Several comments were provided by participants. These will be discussed in greater detail in the following section. Generally the comments related to qualifiers that needed consideration when drafting the final matrix.

DISCUSSION

A consequence rating sheet to be used by inspecting officers, primarily Commanders, has been developed after a number of iterations that included, a literature review, comparisons with other emergency service organisations, both nationally and internationally, interviews, a questionnaire, and concluding with a series of focus groups with key operational personnel. The development of the rating sheet, with supporting documentation is illustrated in (Appendices C, D & E).

This review was initiated after discussions with the Director Operations, Chief Fire Officer Murphy, when he expressed concerns with the traditional approach in determining enhanced responses to premises that posed a significant risk to occupants, firefighters or the broader community. One of the stimuli for the development resulted from a major fire in a supported residential care facility resulting in the death of nine occupants. Whilst the Brigade was not criticised for the actions taken, there has been debate as to whether an enhanced initial response would have resulted in a different outcome.

The consequence rating sheet will afford inspecting officers the opportunity, using a risk based approach, to make decisions on enhanced response criteria to premises deemed to be of 'high risk'. This revised system better equips Commanders when making these important decisions and will provide an enhanced level of protection for firefighters and the community. Current literature clearly suggests that fire service organisations should have the capability to respond additional resources, in a structured manner, to emergencies where either the emergency or the premises involved constitute a significant life risk. This is of particular importance where it is recognised that the emergency will overwhelm initially responded crews that cannot adequately mitigate the circumstances confronting them. (Cote, 1997, p. 10-34; NFPA, 2001).

It has been determined the implementation of a consequence rating tool will provide a risk based, systematic approach to determining an enhanced deployment of resources. This will ensure the

appropriate number of personnel and equipment are responded, in a timely and structured manner, resulting in the prompt and effective management of the emergency. This will result in a lower economic and human cost. Additional benefits for the Brigade will be in the delivery of a prompt and efficient service allowing personnel to operate more expeditiously thus having a sense of a 'job well done', and importantly, minimising the risk of injury to firefighters. These are seen as key benefits by the Organisation's executive management group.

The questionnaire was completed by all personnel attending the focus group workshops. A broad spectrum of staff attended from Communications Managers to Assistant Chief Fire Officers. All personnel have had extensive experience in inspecting premises for defects or responding resources to emergencies based on information provided by members of the public. The level of commitment to reviewing the current system was demonstrated by the attendance of senior executive staff.

A number of issues were identified, both as a result of the literature research as well as the focus group workshops. Many risk assessment models either overview risk from a macro level causing the responsible authority to develop plans that identify the key risks and instigate measures for mitigation. It was a topic of intense discussion in the focus groups. If a community is built in a flood prone area, a plan will be developed for minimising the effect of a one in a hundred year flood which may involve levees, evacuation and the like. Alternatively in the engineering field, mathematical calculations are devised to determine failure rates of equipment versus the resultant consequence of one or multiple failures. This methodology tends to be a very complex; often perceived as hypothetical.

Focus group discussions centred around a need to have a simple tool that provided a 'narrow band' calculated result; as many participants discussed, it would be difficult to determine an enhanced response if the calculated result for a moderate risk involved mathematical parameters of between ten and twenty. The question was asked, what if the calculation was eleven versus nineteen. The inspecting

officer would have a difficult task determining the most appropriate outcome. During the study several officers experimented with various iterations of the consequence rating sheet and determined that tighter consequence rating parameters was the preferred option.

From the focus group findings it was clear that staff required a simple tool that could be easily applied, one that catered for all contingencies, especially when responding to high risk premises. Inspections of premises can be very time consuming usually taking several hours or even days when dealing with major complexes. Both the literature and focus group participants agreed that any tool need to focus on the key deficiencies, both structure and occupancy, be easily calculated and leave minimal doubt as to what outcome should be decided by the inspecting officer. Having a simplistic process based on past professional experience combined with 'gut feel' in this modern era is inappropriate and may lead to an ineffective emergency response resulting in the Organisation failing in its prime objective of protection of life, property and the environment and potentially jeopardise the safety of responders, victims and the community. This was supported by Beever and Cuthbert (2000) where they stated that an ineffective system "fails to accomplish its primary function and threatens the safety of both responders and potential victims alike" (p. 14).

Participants in the survey identified numerous permanent and temporary risks across the Metropolitan Fire District of Melbourne. Whilst many of these premises and facilities have appropriate installed fire detection and protection equipment discussion focused on when there are additional works being carried out or if systems have to be isolated for maintenance or repairs. There are many circumstances where, an otherwise safe building may create a significantly increased risk to patrons, firefighters or both in the event of an emergency. This is supported by Meston (2001) when he determined that risk is a dynamic process. Whilst a community or specific infrastructure may be

perceived to be of minimal risk at a particular point in time, circumstances or the changing environment may dramatically change the level of risk. (P. 9).

As identified in the literature and by the participants, people are the most significant criteria when determining risk. A high priority was placed on the need to protect the disadvantaged and infirmed. It was generally acknowledged by all respondents that evacuating or relocating infirmed or disabled people to safe havens is extremely labour intensive and additional initial resources is highly desirable. When these criteria are combined with deficiencies in the premises, the risk to occupants and emergency workers increases significantly. This was confirmed by several participants recently involved in a relatively minor fire in a city high rise. Approximately three thousand ambulatory people were evacuated as a safe guard. This process took firefighters fifteen minutes to complete; longer than extinguishing the fire.

As a result of the combined workshops a consolidated list of key criteria were established. It was determined by the groups that any rating sheet would be of greater value to the inspecting officer provided the variables were concise and the rating points were minimised to provide tight parameters in determining an enhanced response. There was strong consensus the values established for each level of risk should be narrow thus providing a definitive guide to the officer. This was borne out in a series of field tests conducted by group participants. This is supported by Brice (2001) when he determined that a comprehensive and standardised approach is required when determining the level of firefighter response to premises within a jurisdiction. This is the preferred methodology for ensuring the appropriate deployment of resources to ensure effective fireground operations.

With the parameters established, the focus groups determined that for insignificant or minor risks no additional response would be necessary. However once the consequence level reached moderate an additional primary appliance should be dispatched to emergency calls. There would be a further increase

for ratings that were major or catastrophic. There was general agreement that should a rating of catastrophic be calculated then other immediate actions should be instigated to ensure the appropriate authorities or agencies were notified to initiate immediate corrective action. This was determined on the basis that no adequate level of response would mitigate an emergency where, it was calculated, there were potentially catastrophic consequences.

There was significant discussion in determining the level of discretion that should be afforded the inspecting officer. There was overwhelming agreement that professionalism and judgement must play an important role in the final determination. Also, there may be risks identified that impact on a structure or occupancy from an external source; these might include an isolated water supply, road works or traffic hazards or other general access inhibitors. The final consensus determined that maximum flexibility should be afforded the inspector. If there was any doubt concerning a particular property, it was always prudent to err on the side of caution; thus equating to an enhanced response. Should an inspecting officer have any doubts regarding the assessment of a particular premises, advice would be sought from their Executive Manager.

Participants determined that provided a complex complied with the requirements of the building code, including maintenance provisions, there should be no increase in response. As the enhanced response criteria will be incorporated into the CAD system then regular reviews can be undertaken for any change in status of specific sites; this was deemed important for temporary enhanced responses. There is also an opportunity to provide additional information within the CAD system that, whilst not requiring enhanced responses, could provide valuable information to responding crews. Finally it was determined that a review of the ratings should be undertaken twelve months after the introduction of the risk tool.

Given that the Brigade's role has expanded significantly over the past decade, it was determined that a comprehensive approach to determining enhanced response, based on risk, would better meet organisational and community need long term; a comprehensive framework will cater for the broadest range of emergency response activities.

In summary the consequence rating tool will provide a comprehensive process for a seamless and systematic process for determining the response of appropriate resources to effectively manage the broad range of emergencies for which the MFB is responsible. It is an important tool to ensure effective, safe, emergency response whilst continuing to meet community need and expectation. This tool will provide a systemic approach to determining response based on risk.

RECOMMENDATIONS

The special risk guidelines and consequence rating worksheet (Appendices C, D & E) will be presented to the Director Operations and Executive Management Team for endorsement and adoption.

- The outcomes of these initiatives were evaluated through a variety of measures including: -
- comparisons with other organisations response protocols and whether they followed a risk based approach in determining the weight of resources to be allocated to a defined emergency
 - identifying differing contexts for which similar processes are used to manage the enhanced deployment of resources
 - reviewing the current standard response criteria and
 - considering the views of key stakeholder groups within the Brigade.

The recommendations resulting from the research include,

- a) the Director Operations and Executive Management Team of the MFESB adopt the guidelines and consequence rating worksheet contained in Appendices C,D and E.

- b) the Director Operations of the MFESB communicate the decision to adopt the system to all operational Commanders and Senior staff as well as other key stakeholders including employee representative group (United Firefighters Union)
- c) the guidelines developed in appendix C be used as the basis for implementing a training and familiarisation program for all Commanders and other inspecting officers
- d) the Director Operations, in consultation with the Commander group, Risk Manager and other key stakeholders evaluate the effectiveness of the tool by undertaking a 12-month review and,
- e) a copy of this study is made available as a matter of public record to allow other fire services and emergency response agencies the opportunity to consider their methodology for determining resource response based on risk.

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Appendix A

The following letter and questionnaire was sent out to targeted operational staff members of the MFESB inviting them to participate in a focus group activity. The personnel selected included several Assistant Chief Fire Officers, most of the Operational Commanders, specialists from the Fire Safety Department, Communications Centre representative and the Organisation's Risk Manager.

Personnel were requested to complete the questionnaire prior to attending their respective focus group meeting. Sixty two personnel attended the focus group sessions.

Invitation

17/5/2004

Dear Colleague,

The Director Emergency Response has requested I conduct a series of workshops in order to develop a consequence rating tool, to be used by operational managers, for determining an appropriate "weight of response" to premises identified as 'High Risk'.

To facilitate the process you have been selected to participate in a focus group session to provide your thoughts and ideas relative to the development of a consequence rating tool based on a risk matrix. Attached is a questionnaire that will require completion prior to the focus group sessions.

Given recent significant fires and incidents, resulting in significant life loss, that have occurred across Australia as well as overseas, the Director believes this initiative to be of significance.

Each session will be scheduled for 2 hours and involve 12 to 14 participants.

An e-mail will be distributed detailing dates and times of each session. I envisage the first session will commence early in June.

I look forward to your involvement and participation.

Michael Walker
Assistant Chief Fire Officer
Central Zone
Project Officer

Appendix B

SPECIAL RISK/ENHANCED RESPONSE QUESTIONNAIRE

Q.1 Current Rank/Position:

Number of Years at current rank:

Q2. There are many hazards which constitute a significant risk within the community; some Permanent and others Temporary Risks. For discussion purposes, please provide 3 examples of each.

Permanent

Temporary

1.

2.

3.

Q3. What would constitute key triggers, **relative to a structure**, that would cause an enhanced response to premises? (Rate in order of Priority)

- (1) _____
- (2) _____
- (3) _____
- (4) _____
- (5) _____
- (6) _____

Q4. What would constitute key triggers, **relative to an occupancy**, that would cause an enhanced response to premises? (Rate in order of Priority)

- (1) _____
- (2) _____
- (3) _____
- (4) _____
- (5) _____
- (6) _____

Q5. What rating should be given to each of the following criteria? (Please rate from 1 – 5)

	Rating		Rating
Maintained Fire Alarm	_____	Infirm Patients	_____
Installed Sprinkler System	_____	Sleeping Accommodation	_____
Installed Hydrants/Hose Reels	_____	Night Club/Alcohol	_____
Evacuation System	_____	Chemicals	_____
Evacuation Plan	_____	Heritage Listed	_____
Building Height (4 Storeys)	_____		

Q6. Based on the consequence rating [Insignificant (1 – 3), Minor (4 – 6), Moderate (7 – 9), Major (9 – 12), Catastrophic (13 +)] what additional response should be considered?

Please provide comments.

Insignificant_____

Minor_____

Moderate_____

Major_____

Catastrophic_____

Q7. Should some level of discretion be provided for the inspecting officer when evaluating the risk associated with a given premises?

YES

☐

NO

☐

Q7a. Up to what points level of discretion should be permitted for the inspecting officer? (Please Circle)

1

2

3

4

5

Q8. Other considerations for inclusion in a consequence rating matrix?

Compilation of Data

The information contained within this data was obtained from two sources, from the questionnaires compiled by personnel prior to attending the focus group sessions and from information discussed during each session. The results have been compiled for evaluation from information obtained from the questionnaires and focus group sessions.

N = 62

This compilation of information is part of the Executive Fire Officer Applied Research Project.

n

Question 1 Disposition of participants involved in Focus Groups

62 Current Rank: ACFO **4** of (10) Commander **48** of (58)
 Risk Manager **1** of (1) Fire Safety Officers **5** of (12)
 Communications Operators **9** (22)

62 Years at Rank/Position: ACFO 6 – 10 Commander 2 – 15
 Risk Manager 18 Fire Safety Officers 6 – 18
 Communications Operators 9 – 20

Question 2 Examples of Permanent and Temporary Risks

62

Permanent:	Petrochemical Refineries	Chemical Manufacturers	Domain Tunnel
	Crown Casino	Underground Rail Loop	Coode Island
	Kew Cottages	Public Hospitals	Major Hazard Facilities
	Chadstone Shopping Centre	Convention Centre	Museum
	Halls of Residence – Major Universities		CSL
	CSIRO Laboratories	Bunnings Warehouse	Transport Depots
	Shopping Complexes	High Rise Buildings	Burnley Tunnel
	Royal Talbot Rehab Centre	Blind Institute	Respite Care
	Hospice Accommodation	Warehouses	Fireworks Storage
	Airports	Melbourne Ports	Prisons
	Backpacker Accommodation	Detention Centres	
Temporary:	Building Redevelopment	Asbestos Removal	Damaged Water Main
	Princess Pier	Melbourne Central	Aggressive Persons
	Lack of maintenance of Installed Fire Systems		
	Temporary Change of Occupancy – Inadequate Installed Fire Systems		
	Temporary Isolation of Installed Fire Systems due to building works		

Temporary storage of hazards materials
Road works in or around premises that may be of significant risk

Respondents detailed particular Major Hazard Facilities and Chemical Manufacturers. These were consolidated to the generic Risk.

Question 3. Key Triggers relative to Structure – (rating as per respondent priorities)

62

- Lack of Installed or properly maintained Fire Alarm Systems (31)
- Lack of Installed firefighting equipment (42)
- Inappropriate use of premises (35)
- Lack of compliance with egress provisions (39)
- Lack of evacuation equipment or procedures (39)
- High Rise Building (36)
- Significant Building under construction (18)
- Building of significance – (Historical, Unique, Heritage Classification, etc.) (40)
- Building Complexity (19)
- Building Overcrowding (43)
- Number of occupants – (Casino, Chadstone, etc.) (21)
- Physical Size of Premises / Complex (23)
- Underground Tunnels – Road and Rail (19)
- Airport facilities (16)
- Unique Properties – (High Bay Storage Warehouse, etc.) (29)

Question 4. Key Triggers relative to Occupancy - (rating as per respondent priorities)

62

- Infirm patients – (Hospitals, Supported Residential Care, Hospice, etc.) (58)
- Overcrowding – (Nightclubs, Discos etc.) (49)
- Alcohol impaired people (51)
- Large numbers in sleeping accommodation (60)
- Inappropriate storage of dangerous substances (55)
- Inappropriate use of facilities, particularly relative to accommodation (59)
- Intellectually Challenged people in Residence (60)
- Intellectually Challenged people in Day Care (43)
- Elderly People in residence (62)
- Low socio-economic occupancy – (Half Way houses, Drop in Centres, etc.) (41)
- Chemical Storage / Manufacture (44)
- Backpacker Accommodation – (Overcrowding) (58)
- Fire Load within Premises (32)
- High Bay Storage Facilities (19)
- Prisons, Detention Centre Inmates (43)

Respondents detailed particular Facilities and hazard types. These responses have been consolidated into generic risk factor categories.

Q5. What rating should be given to each of the following criteria?

62

Criteria / Rating	1	2	3	4	5
Maintained Fire Alarm	45	13	4	0	0
Installed Hydrants/Hose Reels	52	8	2	0	0
Evacuation System	53	9	0	0	0
Evacuation Plan	9	36	15	2	0
Building Height (4 Storeys)	41	12	6	3	0
Infirm Patients	0	3	14	45	0
Sleeping Accommodation	0	9	11	42	0
Night Club/Alcohol	17	33	12	0	0
Chemicals	0	8	15	39	0
Heritage Listed	23	32	7	0	0

Question 6. Additional Response relative to Consequence Rating

62

Insignificant (1 – 3) No Enhanced Response

Minor (4 – 6) No Enhanced Response
Notify FSCC

Moderate (7 – 9) 1 Additional primary Appliance and/or Specialist Appliances

Major (9 – 12) 2 Additional Primary Appliances and/or Specialist Appliances
Notify Structural Fire Safety of Concerns

Catastrophic (13 +) 2 Additional Primary Appliances and/or Specialist Appliances
3 Additional Primary Appliances and/or Specialist Appliances
Dependant on circumstances notify responsible authority re the significant concerns relative to the premises

It was generally considered by participants that there would be very few structures or premises that would be categorised as Major or Catastrophic. Should a premise fall into these categories immediate action would need to be taken in notification and action with relevant and responsible authorities.

Question 7. Discretion to the Inspecting Officer

62

Yes	No
60	2

Question 7a. Level of Discretion (Up to the following Score)

62

0	1	2	3	4	5
2	3	5	10	14	28

Question 8. Other Considerations for Consequence Rating Matrix

62

- If a premise complies with all Brigade requirements relative to installed fire protection then additional response should only be considered in extreme circumstances.
- Given the change in dispatch system, consideration should be given to providing advisory notes onto to specific premises rather than upgrading resource response.
- There should be some guidelines established to ensure personnel are using the process in a fairly standardised manner.
- If a risk is identified then the appropriate departments should be advised to initiate actions to rectify situation.
- There should be a follow up process for when stations undertake inspections of premises and perceive that an undue risk is present to occupants or infrastructure.
- All increased responses should be reviewed by the relevant Commander at regular intervals – (12 – 24 months for permanent risks and 3, 6 or 9 months for temporary risks.
- Consequence rating sheet should be reviewed after 12 months in service.
- Consideration should be given to circumstances that may have an effect on response that are not directly involved in the structure or occupancy; e.g. road works, damaged water mains, traffic hazards etc.

Appendix C

METROPOLITAN FIRE BRIGADE

SPECIAL RISK GUIDELINES

Introduction

The MFB has a number of premises within the Metropolitan Fire District that present a greater than normal risk to the public and/or attending firefighters.

These risks are categorised as follows:-

- Permanent Special Risk (PSR)

A long term or permanent risk, to the public/firefighters eg: Mobil Refinery, Fixed Fumigation System.

- Temporary Special Risk (TSR)

A short term or temporary risk to the public/firefighters eg: additional appliance due to asbestos being removed from the building, aggressive occupant.

These 'Special Risks' are generally managed by the MFB in one of two ways:-

- Enhanced Response

An increase in the appliance response to the premises concerned eg: Initial response to Mobil Refinery increased to four appliances.

- Turnout Note

A short text message, linked to the address of the premises concerned, which is presented to Communication Centre Operators and/or attending firefighters (firefighter advice is via the Station Turnout System or the VKN8 radio eg: "*Police to attend, aggressive occupant*")

Turnout Notes require a radius (in metres) to be set around the address which allows for the message to be presented for any call received to an address within that radius.

The Communications Centre, at the direction of Emergency Response Communications undertakes the application of Enhanced Responses/Turnout Notes

All Special Risks are to be reviewed in accordance with the Review Guidelines detailed below.

Application

This system is to be applied in accordance with those Procedures and Working Instructions contained within the Operations Quality Manual:-

- Procedure and Work Instruction as per Zone numbering

DETERMINATION GUIDELINES – Enhanced Response

- Does the building have a recent history of fire?
- Is the building of a type more likely to support rapid fire spread? eg: open stairwell, timber floor
- Is there a high level ignition source in the building?
- Is there a high fire load in the building?
- Is the business conducted in the building of a high risk? eg: explosives factory, dangerous goods
- Do the occupants of the building present a risk? eg: psychiatric patients, persons under court orders.
- Does research indicate that this type of building, or the business conducted therein, increases the risk of fire?
- Has a threat of arson, direct or perceived, been made against the building?
- Other reasons which, in your professional opinion, give cause to the likelihood of a fire.

DETERMINATION GUIDELINES – Turnout Note

- Is there some risk at the premise which firefighters should be aware of?
- Is there a special notification requirement for this premise? eg: “Police to attend violent occupant”, “Inspector to be notified”
- Is there some special equipment required? eg: “Encapsulated Suits to be sent on”

REVIEW GUIDELINES

- Permanent Special Risks (PSR)

As a minimum, are to be reviewed every 12 months.

- Temporary Special Risk

As a minimum, are to be reviewed every 3 months.

<u>Date:</u> _____	<u>Assessing Officer:</u> _____	<u>Station/Platoon:</u> _____
<u>Premises Name:</u> _____		
<u>Address:</u> _____		

	Yes	No	Score
1. <u>Does the premise have a fully maintained fire alarm connected to a monitoring company? If partial coverage refer to point 12.</u>	0	1	-
2. <u>Does the premise have a sprinkler system? If partial coverage refer to point 12.</u>	0	1	-
3. <u>Does the premise have installed hose reels? If partial coverage refer to point 12.</u>	0	1	-
4. <u>Is there an EWIS system installed? If partial coverage refer to point 12.</u>	0	1	-
5. <u>Is there a tested evacuation plan?</u>	0	2	-
6. <u>Are there non-ambulant persons within the building?</u>	4	0	-
7. <u>Does the premise contain sleeping accommodation for greater than 10 people?</u>	4	0	-
8. <u>Does the premise provide nightclub entertainment and dispense alcohol?</u>	2	0	-
9. <u>Are there large quantities of chemicals or hazardous materials stored?</u>	4	0	-
10. <u>Is the premise height greater than four (4) stories?</u>	1	0	-
11. <u>Is the premise and/or contents of significant heritage value?</u>	2	0	-
12. <u>Other reasons, which indicate an additional response eg. professional judgement, lack of water, access, distance of travel, risk to firefighters.</u>	Add 1 to 5 points as assessed		-
Specify:-			

TOTAL: _____

<u>SCORE</u>	<u>CONSEQUENCE</u>	<u>RESPONSE RECOMMENDATION</u>
<u>1 - 3</u>	<u>Insignificant</u>	<u>No enhanced response necessary</u>
<u>4 - 6</u>	<u>Minor</u>	<u>Notify FSCC</u>
<u>7 - 9</u>	<u>Moderate</u>	<u>1 additional primary appliance and/or specialist appliances</u>
<u>9 - 12</u>	<u>Major</u>	<u>2 additional primary appliances and/or specialist appliances.</u>
<u>13 and above</u>	<u>Catastrophic</u>	<u>2 additional primary appliances and/or specialist appliances. Notification to Structural Fire Safety</u>

Appendix E

METROPOLITAN FIRE BRIGADE
REQUEST FOR ENHANCED RESPONSE/TURNOUT NOTE

Date: _____

Name of Premises: _____

Address of Premises: _____

Permanent Special Risk:

(check box)

☐

Temporary Special Risk:

(check box)

☐

Cancellation:

(check box)

☐

Brief Description of Risk: _____

Consequence Rating: _____ None

Enhanced Response: _____

Turnout Note: _____

Turnout Note Radius: _____ metres

Commencement Date: _____

Finish Date: _____

(Temporary Special Risk only)

Note: As a matter of process, an Enhanced Response/Turnout Note to Temporary Special Risks will automatically cease on the Finish Date where a date is provided.

Review Date: _____

Note: As a matter of process, an Enhanced Response/Turnout Note to Permanent Special Risks will be reviewed after 12 months. Enhanced responses to Temporary Special Risks will be reviewed after 3 months.

Requesting Officer: (Commander or above) _____

Zone:

Western

Approved: (ACFO or above) _____

Distribution: Retain file copy at Zone Office, Forward to Manager Communications, Copy to responding stations